

Application No. 10/733,200
Amendment Dated March 5, 2008
After Notice of Allowance Dated December 18, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 -2. (cancelled)

3. (previously presented) A multiplex transmission apparatus connected to a plurality of first communication lines each transmitting a signal comprising of an overhead and a payload according to the standard of SONET (Synchronous Optical Network) or SDH (Synchronous Digital Hierarchy) and to at least one second communication line capable of transmitting a signal according to the same standard as said first communication lines at a speed higher than that of each of said first communication lines, the multiplex transmission apparatus comprising:

a plurality of first transceiver units each connected to one of said first communication lines for receiving a signal transferred on the first communication line and processing a first overhead extracted from the received signal;

a multiplexing and conversion unit for multiplexing at least payload portions of a plurality of signals received from said first transceiver units to generate a payload of a signal to be transmitted to said second communication line;

a second transceiver unit connected to said second communication line and said

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multiplexing and conversion unit for processing a second overhead to be transferred on the second communication line and transmitting a signal having the second overhead and the payload generated by said multiplexing and conversion unit to said second communication line; and

a control unit for controlling the whole operation of the multiplex transmission apparatus, wherein said control unit instructs said second transceiver unit, when said first overhead received by one of said first transceiver units includes, at a predetermined location thereof, automatic protection switching (APS) bytes indicating that a failure occurs on one of said first communication lines, to add the alarm indication to said second overhead,

said second transceiver unit inserts a bit pattern into a predetermined location of said second overhead in response to the instruction from said control unit and transmits a signal having the second overhead with said bit pattern to said second communication line, at least three low order bits of the bit pattern having an all “1” value, and said predetermined location being within a line overhead in the case of SONET and within an M section in the case of SDH,

wherein said predetermined location of said second overhead where said bit pattern is inserted resides in an undefined area having no authorized definition with respect to information to be set therein according to said SONET and SDH standard.

4. (previously presented) The multiplex transmission apparatus according to claim 3, wherein each of said first communication lines and said second communication line further comprises a pair of a working line and a protection line, where said APS bytes give a trigger for

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switching from the working line to the protection line.

5 - 6. (cancelled)

7. (currently amended) A multiplex transmission apparatus connected to at least one first communication line transmitting a signal comprising of an overhead and a payload according to SONET (Synchronous Optical Network) or SDH (Synchronous Digital Hierarchy) and to a plurality of second communication lines each transmitting a signal according to the same standard as said first communication line at a speed lower than that of the first communication line, the multiplex transmission apparatus comprising:

a first transceiver unit connected to said first communication line for receiving a signal transferred on said first communication line and processing a first overhead extracted from the received signal;

a demultiplexing and conversion unit for demultiplexing at least payload portion of the signal received by said first transceiver unit to generate a plurality of payloads of signals to be transmitted to said second communication lines;

a plurality of second transceiver units each connected to said demultiplexing and conversion unit and to one of said second communication lines for processing a second overhead to be transferred on the second communication line and transmitting the second overhead and at least a part of said plurality of payloads generated by said demultiplexing and conversion unit to the second communication lines; and

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a control unit for controlling the whole operation of the multiplex transmission apparatus, wherein said control unit instructs said, second transceiver units, when said first overhead received by said first transceiver unit includes a bit pattern at a predetermined location within a line overhead in the case of SONET and within [[and]] an M section in the case [[sace]] of SDH, to add the bit pattern to each of said second overheads to be transmitted to said second transmission lines, at least three low order bits of said bit pattern having an all “1” value, and each of said second transceiver unit adds said bit pattern to a predetermined location of the second overhead in response to the instruction from said control unit and transmits a signal having the second overhead with said bit pattern to one of said second communication lines, and wherein said predetermined location of said first overhead where said bit pattern is included resides in an undefined area having no authorized definition with respect to information to be set therein according to said SONET and SDH standards.

8. (previously presented) The multiplex transmission apparatus according to claim 7, wherein each of said first communication line and said second communication lines further comprise a pair of a working line and a protection line, and said bit pattern gives a trigger for switching from the working line to the protection line.

9. (cancelled)